REMARKS

Reconsideration and allowance of this application are respectfully requested in light of the foregoing amendments and the following remarks.

STATUS OF THE CLAIMS

Claims 5-13, and 19-21 are pending.

Claims 5-9 and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by, or in the alternative, under 35 U.S.C. 103 (a) as obvious over the U.S. Patent Nos. 6.248,831.

Claims 10-13 and 21 are rejected under 35 U.S.C. 103 (a) as obvious over the U.S. Patent No. 6,248,831 in view of U.S. Patent No. 6,147,167, EP 0 700 769, and U.S. Patent No. 6,485,662.

Claims 5, 6, and 21have been amended. No new matter has been added.

THE INVENTION

The instant invention, as now presented in amended Claim 5, is a multimodal polyethylene composition having:

1) a density of at least about 0.940 g/cm^3 as measured by ASTM Method D-1505;

2) a melt flow index (I_5) of from about 0.2 to about 1.5 g/10 min (as measured by ASTM D-1238, measured at 190 °C and 5 kilograms);

3) a melt flow index ratio (I_{21}/I_5) of from about 20 to about 50;

4) a molecular weight distribution, Mw/Mn, of from about 20 to about 40; and

5) a bubble stability measured on an HS50S stationary extrusion system with an BF 10-25 die, HK 300 air ring, A8 take off, and WS8 surface winder, all commercially available from Hosokawa Alpine Corporation, with a 100 mm die diameter having a 50 mm 21:1 L/D grooved feed extruder used according to the conditions described herein for a film of about 6 X 10^{-6} m thickness of at least about 1.22 m/s line speed, at least about 45 kg/hr (0.013 kg/sec) output rate, or at least about 0.5 lb/hr/rpm (0.0000011 kg/s/rps) specific output rate or a combination thereof;

6) a dart impact on 12.5 micron (1.25×10^{-5} m) film of at least 300 g; measured according to ASTM 1709, Method A;

the composition comprising;

A) a high molecular weight fraction which;

a) is present in an amount of from about 30 to about 70 weight percent (based on the total weight of the composition);

b) has a density of at least about 0.860 g/cm^3 as measured by ASTM D-1505;

c) has a melt flow index (I_{21}) of from about 0.01 to about 50 g/10 min (as measured by ASTM D-1238, measured at 190 °C and 21.6 kilograms); and

d) a melt flow index ratio (I_{21}/I_5) of from about 6 to about 12; and

B) a low molecular weight fraction which;

a) is present in an amount of from about 30 to about 70 weight percent (based on the total weight of the composition);

b) has a density of at least about 0.900 g/cm^3 as measured by ASTM D-1505;

c) has a melt flow index (I_2) of from about 0.5 to about 3000 g/10 min (as measured by ASTM D-1238, measured at 190 °C and 2.16 kilograms);

d) a melt flow index ratio (I_{21}/I_5) of from about 5 to about 15; and

e) is prepared using a mole ratio of alpha olefin to ethylene less than that in the high molecular weight fraction of less than or equal to about 0.01:1;

wherein said blend is melted in an extruder having a mixer vent, wherein the mixer vent has an oxygen concentration of from about 0.05 to about 6 volume percent oxygen in nitrogen; and the extrusion temperature is sufficient to melt the blend and result in tailoring the blend in the presence of the oxygen; and wherein said molten blend is passed through one or more active screens, wherein in the case of two or more active screens, the screens are positioned in series, each active screen having a micron retention size of from about 2 to about 70, at a mass flux of about 5 to about 100 lb/hr/in^2 (1.0 to 20 kg/s/m^2) to form a screened molten polymer blend.

PRIOR ART REFERENCES

U.S. Patent Nos. 6,248,831 (Ref. 1) discloses an *in situ* polyethylene blend. (Column 2, Lines 64-66). The *in situ* polyethylene blend may be characterized as a bimodal resin. (Column 4, Lines 22-25). The blend is produced in two staged reactors connected in series. (Column 3, lines 54-55). The high molecular weight (HMW) polymer fraction produced in the HMW reactor has a melt flow ratio (I_{21}/I_5) in the range of 20 to 65. (Column 7, Lines 12-15). The low molecular weight (LMW) polymer fraction produced in the LMW reactor has a melt flow ratio (I_{21}/I_5) in the range of 20 to 65. (Column 7, Lines 36-38). The final product has a melt flow ratio (I_{21}/I_5) in the range of 20 to 45. (Column 7, Lines 43-45). Furthermore, Ref. 1 teaches away from the present invention for the following reasons. According to Ref. 1 granular resin and additives are fed at room temperature under controlled oxygen level at feed and ports. (Column 15, lines 10-16). Furthermore, Ref. 1 requires precautions to be taking to eliminate the possibility of tailoring (oxidative degradation) during the compounding step. (Column 15, lines 14-16).

DISCUSSION WITH REGARD TO SECTION 102(b) REJECTION

First, Claims 5-9 and 20 are not anticipated by of the U.S. Patent Nos. 6,248,831 (Ref. 1) under 35 U.S.C. 102(b) for the reasons stated below.

To anticipate a claim, a single source must contain all of the elements of the claim. *See Hybritech Inc. v. Monoclonal Antibodies, Inc.,* 802 F.2d 1367, 1379, 231 USPQ 81, 90 (Fed. Cir. 1986); *Atlas Powder Co. v. E.I. du Pont De Nemours & Co.,* 750 F.2d 1569, 1574, 224 USPQ 409, 411 (Fed. Cir. 1984); *In re Marshall,* 578 F.2d 301, 304, 198 USPQ 344, 346 (C.C.P.A. 1978). Missing elements may not be supplied by the knowledge of one skilled in the art or the disclosure of another reference. *See Structural Rubber Prods. Co. v. Park Rubber Co.,* 749 F.2d 707, 716, 223 USPQ 1264, 1271 (Fed. Cir. 1984). Where a reference discloses less than all of the claimed elements, an Examiner may only rely on 35 USC § 103. *See Titanium Metals Corp. v. Banner,* 778 F.2d 775, 780, 227 USPQ 773, 777 (Fed. Cir. 1985).

As explained above, the instant invention, as now presented in Claims 5 and 6, requires

a multimodal polyethylene composition having a melt flow index ratio (I_{21}/I_5) of from about 20 to about 50, wherein the multimodal composition comprises a blend (**A**) **a high molecular weight (HMW) fraction having a melt flow index ratio (I_{21}/I_5) of from about 6 to about 12; and (B) a low molecular weight (LMW) fraction having a melt flow index ratio (I_{21}/I_5) of from about 5 to about 15;** wherein said blend is melted in an extruder having a mixer vent, wherein the mixer vent has an oxygen concentration of from about 0.05 to about 6 volume percent oxygen in nitrogen; and the extrusion temperature is sufficient to melt the blend and result in tailoring the blend in the presence of the oxygen; and wherein said molten blend is passed through one or more active screens, wherein in the case of two or more active screens, the screens are positioned in series, each active screen having a micron retention size of from about 2 to about 70, at a mass flux of about 5 to about 100 lb/hr/in^2 (1.0 to 20 kg/s/m^2) to form a screened molten polymer blend.

Not only does Ref. 1 fail to mention anything about a HMW fraction having a melt flow index ratio (I_{21}/I_5) of from about 6 to about 12; and (B) a LMW fraction having a melt flow index ratio (I_{21}/I_5) of from about 5 to about 15, but it also teaches away from it. Ref. 1 teaches away from the instant invention because Ref. 1 expressly requires a HMW fraction having a melt flow ratio (I_{21}/I_5) in the range of 20 to 65 (Column 7, Lines 12-15); and a LMW fraction having a melt flow ratio (I_{21}/I_5) in the range of 20 to 65. (Column 7, Lines 36-38).

Furthermore, Ref. 1 teaches away from the present invention for the following reasons. According to Ref. 1 granular resin and additives are fed at room temperature under controlled oxygen level at feed and ports. (Column 15, lines 10-16). Furthermore, Ref. 1 requires precautions to be taking to eliminate the possibility of tailoring (oxidative degradation) during the compounding step. (Column 15, lines 14-16).

Accordingly, the instant invention, as now presented in Claims 5-9 and 20, is not anticipated by the U.S. Patent Nos. 6,248,831 (Ref. 1) under 35 U.S.C. 102(b). Therefore, the above 102 rejection should be removed.

DISCUSSION WITH REGARD TO SECTION 103(a) REJECTION

First, Claims 5-9 and 20 are non-obvious over the U.S. Patent Nos. 6,248,831 (Ref. 1) under 35 U.S.C. 103(a) for the reasons stated below. Second, Claims 10-13 and 21 are non-obvious over the U.S. Patent No. 6,248,831 (Ref. 1) in view of U.S. Patent No. 6,147,167 (Ref. 2), EP 0 700 769 (Ref. 3), and U.S. Patent No. 6,485,662 (Ref. 4) under 35 U.S.C. 103 (a).

An invention that would have been obvious to a person of ordinary skill at the time of the invention is not patentable. *See* 35 U.S.C. 103(a). As reiterated by the Supreme Court in *KSR* , the framework for the objective analysis for determining obviousness under 35 U.S.C. 103 is stated in *Graham v. John Deere Co.*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966). *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 82 U.S.P.Q.2d 1385 (2007). Obviousness is a question of law based on underlying factual inquiries. *Graham v. John Deere Co.*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966). The factual inquiries enunciated by the *Graham* Court are as follows: (A) Determining the scope and content of the prior art; and (B) Ascertaining the differences between the claimed invention and the prior art; and (C) Resolving the level of ordinary skill in the pertinent art. *Graham v. John Deere Co.*, 383 U.S. 1, 148 U.S.P.Q. 459 (1966).

To reject claims in an application under section 103, an examiner must show a *prima facie* case of obviousness. *In re Deuel,* 51 F.3d 1552, 1557 (Fed. Cir. 1995). Furthermore, all words in a claim must be considered in judging the patentability of that claim against prior art. *In re Wilson,* 424 F.2d 1382, 1385 (CCPA 1970). In addition, to establish a *prima facie* case of obviousness, the following three basic elements must be met: (1) there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings; (2) the prior art reference or references when combined must teach or suggest all the claim limitations; **and** (3) there must be a reasonable expectation of success. MPEP § 2143. Finally, if an independent claim is non-obvious under 35 U.S.C. 103, then any claim depending therefrom is non-obvious. *In re Fine,* 837 F.2d 1071 (Fed. Cir. 1988).

As explained above, the instant invention, as now presented in Claims 5 and 6, requires a multimodal polyethylene composition having a melt flow index ratio (I_{21}/I_5) of from about 20 to about 50, wherein the multimodal composition comprises **(A) a high molecular weight (HMW) fraction having a melt flow index ratio (I_{21}/I_5) of from about 6 to about 12; and (B) a low molecular weight (LMW) fraction having a melt flow index ratio (I_{21}/I_5) of from**

about 5 to about 15; wherein said blend is melted in an extruder having a mixer vent, wherein the mixer vent has an oxygen concentration of from about 0.05 to about 6 volume percent oxygen in nitrogen; and the extrusion temperature is sufficient to melt the blend and result in tailoring the blend in the presence of the oxygen; and wherein said molten blend is passed through one or more active screens, wherein in the case of two or more active screens, the screens are positioned in series, each active screen having a micron retention size of from about 2 to about 70, at a mass flux of about 5 to about 100 lb/hr/in^2 (1.0 to 20 kg/s/m^2) to form a screened molten polymer blend.**.**

Not only do the teachings of Ref. 1, alone or in combination with the teachings of Refs. 2-4, fail to mention anything about a HMW fraction having a melt flow index ratio (I_{21}/I_5) of from about 6 to about 12; and (B) a LMW fraction having a melt flow index ratio (I_{21}/I_5) of from about 5 to about 15, but the teachings of Ref. 1, alone or in combination with the teachings of Refs. 2-4, also teach away from a HMW fraction having a melt flow index ratio (I_{21}/I_5) of from about 6 to about 12; and (B) a LMW fraction having a melt flow index ratio (I_{21}/I_5) of from about 5 to about 15. The teachings of Ref. 1, alone or in combination with the teachings of Refs. 2-4, teach away from the instant invention because the teachings of Ref. 1, alone or in combination with the teachings of Refs. 2-4, expressly requires a HMW fraction having a melt flow ratio (I_{21}/I_5) in the range of 20 to 65 (Column 7, Lines 12-15); and a LMW fraction having a melt flow ratio (I_{21}/I_5) in the range of 20 to 65. (Column 7, Lines 36-38). In addition, Ref. 1 teaches away from the present invention because according to Ref. 1, granular resin and additives are fed at room temperature under controlled oxygen level at feed and ports. (Column 15, lines 10-16). Furthermore, Ref. 1 requires precautions to be taking to eliminate the possibility of tailoring (oxidative degradation) during the compounding step. (Column 15, lines 14-16).

Accordingly, the Examiner has failed to establish a *prima facie* case of obviousness.

Therefore, the above 103 rejections should be removed.

CONCLUSION

In view of the forgoing, Applicant respectfully requests that the instant application be allowed to proceed to issuance.

Dated: January 27, 2010

Respectfully submitted,

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